# COMMONWEALTH OF VIRGINIA

**Department of Environmental Quality**
**Piedmont Regional Office**

## STATEMENT OF LEGAL AND FACTUAL BASIS

Columbia Gas Transmission Corporation
Goochland Compressor Station
1436 Hermitage Road, Manakin-Sabot, Virginia
Permit No.: PRO 51002

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Columbia Gas Transmission Corporation has applied for a Title V Operating Permit for its Goochland, Virginia facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Engineer/Permit Contact: _____ Date: _____

Air Permit Manager: _____ Date: _____

Regional Deputy Director: _____ Date: _____

## FACILITY INFORMATION

**Permittee**
Columbia Gas Transmission Corporation
P.O. Box 1273
Charleston, WV 25325-1273
Virginia

**Facility**
Goochland Compressor Station
1436 Hermitage Road
Manakin-Sabot, Goochland County,

**Responsible Official**
Dana M. Debaets
Field Service – Operations Manager
(804) 733-2471

**Contact person**
Greg Lago
Env. Health & Safety Coordinator
(304) 357-2079
(304) 357-2700 (fax)

Registration No.: 51002
County Plant ID No.: 075-0026

## SOURCE DESCRIPTION

The facility is a natural gas pipeline compressor station (SIC 4922). Natural gas is received via gas pipelines from an upstream compressor station, compressed using five (5) Solar Saturn T-1300 turbine engines rated at 1,313 hp each, and pumped into outlet pipelines for transmission to a downstream station. Other auxiliary equipment includes a natural gas-fired boiler rated at 0.84 MMBtu/hr, an 82 hp emergency generator fueled by natural gas, and storage tanks. Fugitive VOC emissions due to equipment leaks and blowdowns are estimated to be approximately 4.3 tons/year.

Two of the turbines were originally installed in 1966, two others in 1970, and a fifth was installed in 1990. In 1990, the four older turbines were significantly upgraded, to the extent that all five are subject to the requirements of 40 CFR 60, Subpart GG.

Permit actions since 09/08/98 include; amending fuel sampling requirements for Nitrogen Oxide (NOx) 10/13/98, small storage tanks replacement 08/18/99 (exempt from permitting), and installation of a 0.153 MMBTU/hr. heater 09/11/01 (exempt from permitting), no significant changes have been made to this facility.

This facility has been classified as a major/potential major source with the **potential** to emit in excess of 100 tpy of Nitrogen Oxide (NOx) and Carbon Monoxide (CO) and considered a true minor for Sulfur Dioxide ($SO_2$) and Volatile Organic Compounds (VOC), and is located in an attainment area. This facility is not considered a major for Hazardous Air Pollutants (HAPs).

## COMPLIANCE STATUS

A full compliance evaluation of this facility, including a site visit, has been conducted. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time.

The first permit was issued on 08/31/90, there had been 4 inspections, in 1991, 1994, 1995, and 1997, the facility was found to be in compliance each time. The first Title V was issued on 09/08/98 there have been 9 various types of inspections done, in 1998, 2000, 2001, 2002, and 2003, the facility was found to be in compliance each time.

## EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consists of the follows:

| Emission Unit No. | Stack No. | Emission Unit Description | Size/Rated Capacity | Manufacturer & Date of Construction | PC & PCD ID | Applicable Permit Date |
|---|---|---|---|---|---|---|
| 16901 | E01 | Natural Gas Turbine Engine | 14.46 MMBTU/hour .0145 $MMft^3$/hr | Solar Saturn T-1300 Modified 1990 | - | - |
| 16902 | E02 | Natural Gas Turbine Engine | 14.46 MMBTU/hour .0145 $MMft^3$/hr | Solar Saturn T-1300 Modified 1990 | - | - |
| 16903 | E03 | Natural Gas Turbine Engine | 14.46 MMBTU/hour .0145 $MMft^3$/hr | Solar Saturn T-1300 Modified 1990 | - | - |
| 16904 | E04 | Natural Gas Turbine Engine | 14.46 MMBTU/hour .0145 $MMft^3$/hr | Solar Saturn T-1300 Modified 1990 | - | - |
| 16905 | E05 | Natural Gas Turbine Engine | 14.46 MMBTU/hour .0145 $MMft^3$/hr | Solar Saturn T-1300 Installed 1990 | - | - |

## EMISSIONS INVENTORY

2002 Actual Emission – A copy of the 2002 annual emission inventory update is attached.

| | 2002 Criteria Pollutant Emissions in Tons/Year | | | | |
|---|---|---|---|---|---|
| **Emission Units** | **VOC** | **CO** | **NO2** | **SO2** | **PM-10** |
| Turbines – Five (5) Natural Gas<br><br>16901 thru 16905 | 9.6 | 26.5 | 18.7 | 0.6 | 1.5 |
| **TOTAL** | 9.6 | 26.5 | 18.7 | 0.6 | 1.5 |

2002 Plant Emissions for Hazardous Air Pollutants (HAPs)

| Pollutants | 2002 Plant Emissions Hazardous Air Pollutant in Tons/Year |
|---|---|
| Formaldehyde | 0.19 |
| NH3 | 1.5 |
| PB | 0.0 |

## EMISSION UNIT APPLICABLE REQUIREMENTS – Solar Saturn T-1300 (16901-16905)

### Limitations

1. Nitrogen Oxides ($NO_x$), Carbon Monoxide (CO), and Volatile Organic Compound (VOC) emissions from the turbines (16901-16905) shall be controlled by equipment design and operation.
   (9 VAC 5-50-260, specific Condition 3 of NSR permit issued 10/13/98)

2. The approved fuel for each Solar Saturn T-1300 turbine engine (16901-16905) is natural gas. A change in the fuel may require a permit to modify and operate.
   (9 VAC 5-170-160, specific Condition 4 of NSR permit issued 10/13/98)

3. Fuel utilized for the turbines (16901-16905) shall not contain sulfur in excess of 0.01 percent by weight.
   (9 VAC 5-50-260, specific Condition 5 of NSR permit issued 10/13/98)

4. The permitted facility shall be constructed so as to allow for emissions testing and monitoring upon reasonable notice at any time, using appropriate methods. Test ports shall be provided at the appropriate locations.
   (9 VAC 5-50-30 F, specific Condition 6 of NSR permit issued 10/13/98)

5. Each Solar Saturn T-1300 Turbine Engine (16901-16905) shall consume no more than 127,000,000 cubic feet of natural gas fuel per year, calculated as the sum of each consecutive 12 month period.
   (9 VAC 5-170-160, specific condition 7 of NSR permit issued 10/13/98)

6. Emissions from the operation of each solar Saturn T-1300 turbine engine (16901-16905) shall not exceed the limits specified below:

| | | | |
|---|---|---|---|
| Sulfur Dioxide | | 0.1 lbs/hr | 0.6 tons/yr |
| Nitrogen Oxides (as $NO_2$) | 76 ppmvd @ 15% $O_2$ & ISO ambient conditions | 4.5 lbs/hr | 19.8 tons/yr |
| Carbon Monoxide | | 6.4 lbs/hr | 28.1 tons/yr |
| Volatile Organic Compounds | | 2.3 lbs/hr | 10.1 tons/yr |

   (9 VAC 5-50-260 & 9 VAC 5-50-180, specific condition 8 of NSR permit issued 10/13/98).

7. Visible emissions from each Solar Saturn T-1300 turbine engine (16901-16905) shall not exceed five (5) percent opacity as determined by EPA Method 9 (reference 40 CFR 60, Appendix A).
   (9 VAC 5-170-160, specific condition 9 of NSR permit issued 10/13/98)

## Monitoring

1. Fuel monitoring of the nitrogen content, as specified by NSPS Subpart GG is waived.
   (9 VAC 5-170-160, specific Condition 6 of Title V permit issued 9/14/98)

2. Fuel monitoring of the sulfur content shall be conducted as follows:

   a. Analysis for fuel sulfur content of the natural gas shall be conducted twice annually, during the first and third quarters of each calendar year, using one of the approved ASTM reference methods for the measurement of sulfur in gaseous fuels, or an approved alternative method. The reference methods are: ASTM D1072-80; ASTM D3031-81; ASTM D3246-81; and ASTM D4084-82 as referenced in 40 CFR 60.335(d).

   b. Should any sulfur analysis as required in item 2 above indicate noncompliance, the owner or operator shall notify the Director, Piedmont Region of such excess emissions and this semi-annual schedule shall be re-examined by the Department. Sulfur monitoring shall be conducted weekly during the interim period when this semi-annual schedule is being re-examined.

   c. If there is a change in fuel supply the owner or operator must notify the Director, Piedmont Region of such change for re-examination of the semi-annual sulfur monitoring schedule. A substantial change in fuel quality shall be considered as a change in fuel supply. Sulfur monitoring shall be conducted weekly during the interim period when this monitoring schedule is being re-examined.

   d. Records of sample analysis and fuel supply pertinent to this monitoring schedule shall be retained for a period of five years, and shall be available for inspection by the DEQ.

   (9 VAC 5-170-160, specific condition 10 (a, b and c) of NSR permit issued 10/13/98)

## Recordkeeping

1. The permittee shall maintain records of all emission data and operating parameters necessary to demonstrate compliance with this permit. The content of and format of such records shall be arranged with the Director, Piedmont Region. These records shall include, but are not limited to:

   a. The monthly and yearly throughput of natural gas for each Solar T-1300 turbine engine (16901-16905), calculated as the sum of each consecutive 12 month period.

   b. Hours of operation per turbine (16901-16905), monthly.

c. Fuel sulfur analyses.

d. Records of malfunctions of equipment, which would cause a violation of any part of this permit.

e. Operating procedures, maintenance schedules, and service records for the Solar Saturn T1300 turbine engines (16901-16905).

These records shall be available on site for inspection by the DEQ and shall be current for the most recent five (5) years.
(9 VAC 5-50-50, specific condition 11 (a and b) of NSR permit issued 10/13/98)

2. In order to minimize the duration and frequency of excess emissions due to malfunctions of process equipment or air pollution control equipment, the permittee shall:

   a. Develop a maintenance schedule and maintain records of all scheduled and non-scheduled maintenance. These records shall be maintained on site for a period of five (5) years and shall be made available to DEQ personnel upon request.

   b. Maintain an inventory of spare parts that are needed to minimize the duration of air pollution control equipment breakdowns.

   (9VAC 5-170-160, specific condition 15 of NSR permit issued 10/13/98)

3. The permittee shall have available written operating procedures for the related air pollution control equipment. Operators shall be trained in the proper operation of all such equipment and shall be familiar with the written operating procedures. These procedures shall be based on the manufacturer's recommendations, at minimum. The permittee shall maintain records of training provided including names of trainees, date of training and nature of training.
   (9 VAC 5-170-160, specific condition 16 of NSR permit issued 10/13/98)

In Section IV, (C) conditions 2 and 3 were added to the Title V permit in order to make equipment maintenance a federally enforceable requirement in lieu of periodic monitoring for opacity. The "EPA Draft Final Periodic Monitoring Guidance" dated May 11, 1998 specifically gives the example of turbines burning pipeline natural gas only, and states that federally enforceable requirements for equipment maintenance can satisfy the requirement for periodic monitoring of compliance with the opacity standard.

## Testing

The permit does not require source tests. Method 20 of the test methods has been included in the permit if testing is performed. The Department and EPA has authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

## Reporting

1. Should any sulfur analysis as required, Monitoring item 2 (a) above indicate noncompliance, the owner or operator shall notify the Director, Piedmont Region of such excess emissions and the monitoring schedule shall be re-examined by the DEQ. Sulfur monitoring shall be conducted weekly during the interim period when this monitoring schedule is being re-examined.
   (9 VAC 5-170-160, specific condition 10 (a)(2) of NSR permit issued 10/13/98)

2. If there is a change in fuel supply the owner or operator must notify the Director, Piedmont Region of such change for re-examination of the semi-annual sulfur monitoring schedule. A substantial change in fuel quality shall be considered as a change in fuel supply. Sulfur monitoring shall be conducted weekly during the interim period when this monitoring schedule is being re-examined.
   (9 VAC 5-170-160, specific condition 10 (b) in NSR permit issued 10/13/98)

## GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that applies to all Federal Operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

## Comments on General Conditions

### B. Permit Expiration

This condition refers to the Board taking action on a permit application. The Board is the State Air Pollution Control Board. The authority to take action on permit application(s) has been delegated to the Regions as allowed by ' 2.1-20.01:2 and ' 10.1-1185 of the *Code of Virginia,* and the "Department of Environmental Quality Agency Policy Statement NO. 3-2001".

This general conditions cites the entire Article that follow:
Article 1 (9 VAC 5-80-50 et seq.), Part II of 9 VAC 5 Chapter 80. Federal Permits for Stationary Sources

This general condition cites the sections that follow:
9 VAC 5-80-80. Application
9 VAC 5-80-140. Permit Shield
9 VAC 5-80-150. Action on Permit Applications

### F. Failure/Malfunction Reporting

Section 9 VAC 5-20-180 requires malfunction and excesses emissions reporting within 4 hours. Section 9 VAC 5-80-250 also requires malfunction reporting; however, reporting is required within 2 days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities

are subject to this section including Title 5 facilities. Section 9 VAC 5-80-250 is from the Title 5 regulations. Title 5 facilities are subject to both Sections. A facility may make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within 4 day time business hours of the malfunction.

In order for emission units to be relieved from the requirement to make a written report in 14 days the emission units must have continuous monitors and the continuous monitors must meet the requirements of 9 VAC 5-50-410 or 9 VAC 5-40-41.

This general condition cites the sections that follow:

9 VAC 5-40-41. Emissions Monitoring Procedures for Existing Sources
9 VAC 5-40-50. Notification, Records and Reporting
9 VAC 5-50-50. Notification, Records and Reporting

This general condition contains a citation from the Code of Federal Regulations as follows:
F.2.a. 40 CFR 60.13 (h). Monitoring Requirements.

**J. Permit Modification**

This general condition cites the sections that follow:
9 VAC 5-80-50. Applicability, Federal Operating Permit For Stationary Sources
9 VAC 5-80-190. Changes to Permits.
9 VAC 5-80-260. Enforcement.
9 VAC 5-80-1100. Applicability, Permits For New and Modified Stationary Sources
9 VAC 5-80-1790. Applicability, Permits For Major Stationary Sources and Modifications Located in Prevention of Significant Deterioration Areas
9 VAC 5-80-2000. Applicability, Permits for Major Stationary Sources and Major Modifications Locating in Nonattainment Areas

**U. Malfunction as an Affirmative Defense**

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in section 9 VAC 5-80-250 and 9 VAC 5-20-180. The malfunction requirements are listed in General Condition U and General Condition F. For further explanation see the comments on general condition F.

This general condition cites the sections that follow:
9 VAC 5-20-180. Facility and Control Equipment Maintenance or Malfunction
9 VAC 5-80-110. Permit Content

**Y. Asbestos Requirements**

The Virginia Department of Labor and Industry under Section 40.1-51.20 of the Code of Virginia also holds authority to enforce 40 CFR 61 subpart M, National Emission Standards for Asbestos.

This general condition contains a citation from the Code of Federal Regulations that follow:
40 CFR 61.145, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to demolition and renovation.
40 CFR 61.148, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to insulating materials.
40 CFR 61.150, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to waste disposal.

This general condition cites the regulatory sections that follow:
9 VAC 5-60-70. Designated Emissions Standards
9 VAC 5-80-110. Permit Content

## STATE ONLY APPLICABLE REQUIREMENTS

The following Virginia Administrative Code have specific requirements only enforceable by the State and have been identified.

9 VAC 5-50-320 - Toxic Pollutants

## FUTURE APPLICABLE REQUIREMENTS – N/A

## INAPPLICABLE REQUIREMENTS

Fuel monitoring of the nitrogen content, as specified by NSPS Subpart GG is waived.
(9 VAC 5-170-160, specific Condition 6 of Title V permit issued 9/14/98)

The "Proposed National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities and Natural Gas Transmission and Storage Facilities" (40 CFR Part 63, Subpart HH) do not apply to this facility. The proposed standards list natural gas transmission and storage as a category of major sources only. Since the facilities potential to emit hazardous air pollutants is well below major source thresholds, it will not apply to this facility as proposed. If the proposed MACT is changed to include area sources in the natural gas transmission and storage industry as well, then this permit would have to be re-opened to incorporate any new requirements of the standards.

## INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

| Emission Unit No. | Emission Unit Description | Citation (9 VAC_) | Pollutant Emitted (5-80-720 B.) | Rated Capacity (5-80-720 C.) |
|---|---|---|---|---|
| BLR1 | Natural Gas-Fired Boiler | 5-80-720 C.2. | TSP, PM10, $NO_x$, $SO_2$, CO, VOC | 0.84 MMBtu/hr |
| 169G1 | Natural Gas Internal Compression Engine | 5-80-720 C.4. | TSP, PM10, $NO_x$, $SO_2$, CO, VOC | 82 hp |
| A06 | Lube Oil Tank | 5-80-720 C.3. | VOC | 550 gallons |
| A05 | Pipeline Liquids Tank | 5-80-720 B.2. | VOC, benzene, ethylbenzene, hexane, toluene, xylenes | 1000 gallons |
| A07 | Compressor Oil Tank | 5-80-720 C.3. | VOC | 300 gallons |
| A04 | Water Mixture Tank (Wastewater) | 5-80-720 B.2. | VOC | 275 gallons |
| FUG | Facility | 5-80-720 B.2. | VOC | N/A |
| A | Total Energy NG-Model #2005-0100 | 5-80-720 C.2. | TSP, PM10, $NO_x$, $SO_2$, CO, VOC | 0.153 MMBtu/hr |

These emission units are presumed to be in compliance with all requirements of the federal Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping, or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110. The above emission units at the facility are identified in the application as insignificant emission units under 9 VAC 5-80-720:

[1]The citation criteria for insignificant activities are as follows:
9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application
9 VAC 5-80-720 B - Insignificant due to emission levels
9 VAC 5-80-720 C - Insignificant due to size or production rate

## CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

## PUBLIC PARTICIPATION

The proposed permit will be place on public notice in the Richmond Times Dispatch from July 14, 2003 to August 13, 2003 .